

SHORT REPORT

DIMMING OF METAL HALIDE LAMPS

Kees Schurer

IMAG-DLO, P.O. Box 43, 6700 AA Wageningen, The Netherlands

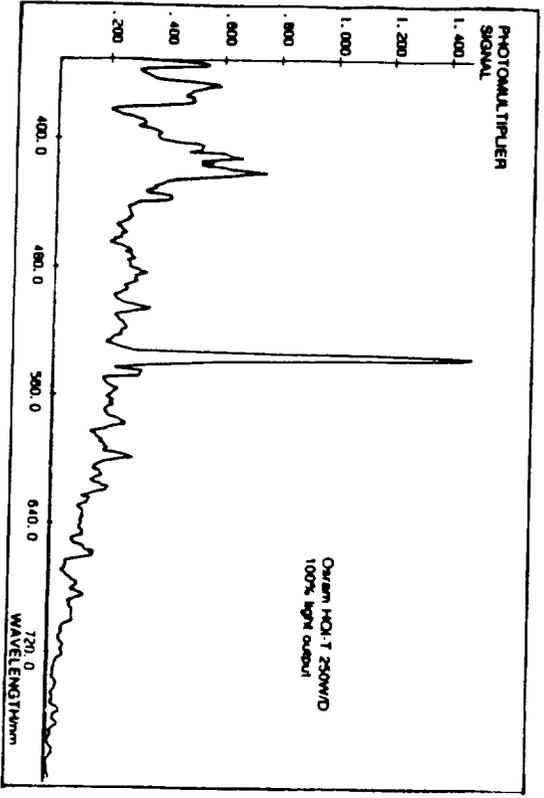
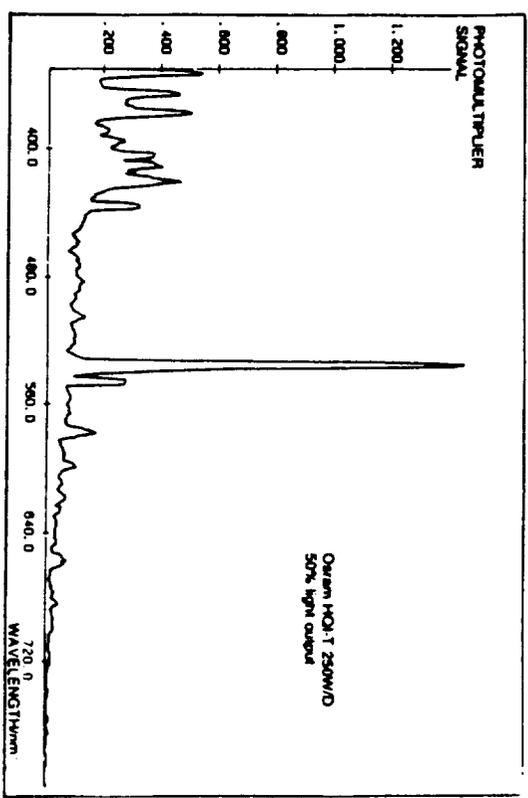
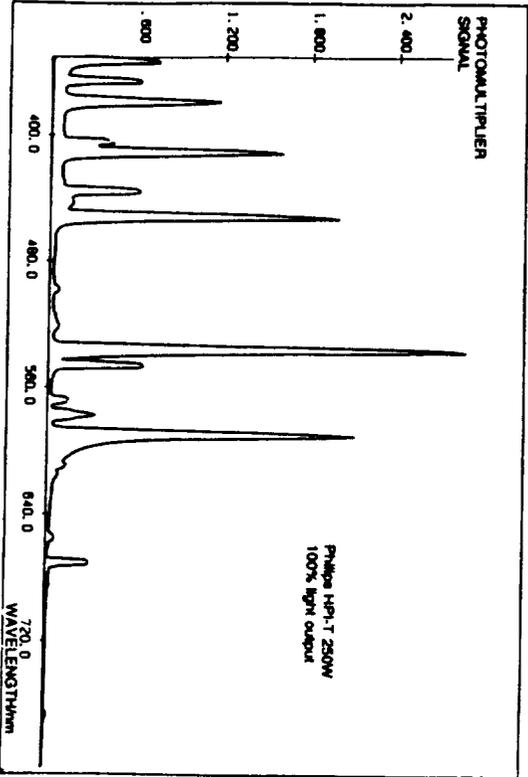
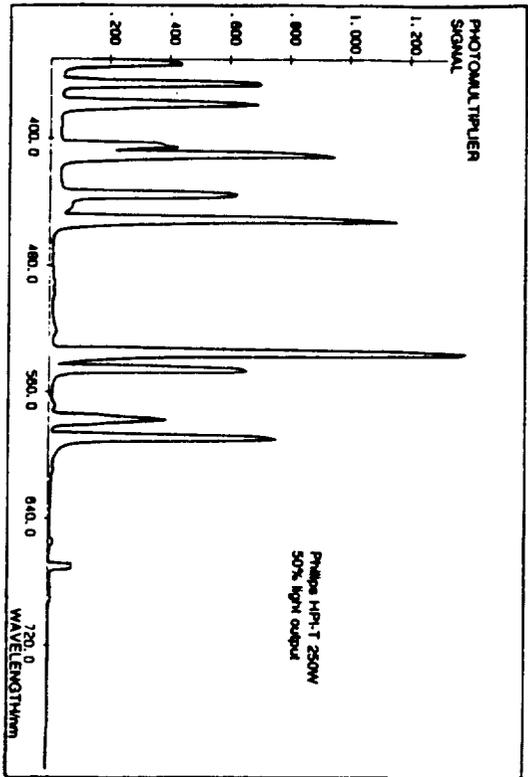
We ran some tests on the effect of dimming of metal halide (MH) lamps upon the stability and the spectral quality of the light output. Lamps used were a new Philips lamp HPI-T 250W, a similar Philips lamp with a few thousand burning hours and a new Osram lamp HQI-T 250W/D. The ballast was a BBC type DJ 250/2KS, the starter a BAS TORGI type MZN 250 SE and the dimmer an Elstrom Control System type ERHQ-T 250. Power was derived from a Philips stabilizer, type PE 1602.

Lamp output was monitored with a PAR meter. Spectra were taken at 100% and at 50% output as measured with the PAR meter. Lamps were allowed to stabilize at any setting for 30 minutes before measurements were made. Lamp current at 100% and 50% was found to be 3.0 A and 2.6 A respectively for the Osram lamp, and 2.2 A and 1.5 A respectively for the Philips lamps.

Lamp manufacturers advise against dimming for fear of poor stability and intolerable changes of the spectrum. However, none of the lamps showed a decrease in stability, no flicker or wandering of the discharge, and the changes of the spectrum were not negligible, but certainly not dramatic. Lamps of either manufacture retain their white color, relative peak heights of spectral lines did shift, but no gaps in the spectrum occurred. Spectra taken at 50% with 30 minutes intervals coincided. Differences between the new and the older Philips lamp were noticeable, but not really significant.

The figures show spectra for the new Philips and Osram lamps in a horizontal burning position at 50% and 100% light output. These are direct recordings of the photomultiplier (Hamamatsu R 636) signals in a monochromator system with a spectral bandwidth of 1.25 nm (FWHM), measured in 1 nm intervals.

PRECEDING PAGE BLANK NOT FILMED



Spectra of MH lamps at 50% and 100% light output